

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-17, 19 and 23 are presently active in this case. Claim 21 was cancelled by a previous amendment. The present Amendment amends Claims 1, 9, 12, 16-17 and 19, and adds new Claim 23 without introducing any new matter; and cancels Claims 18, 20 and 22 without prejudice or disclaimer.

In the outstanding Office Action, Claims 1-13, 18-20, and 22 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 12, 16, and 18-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kohonen et al (IEEE Publication, Self Organization of a Massive Document Collection, May 2000, hereinafter “Kohonen”). Claims 1-2, 5, 10-11, 14-15, 17, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharp (International Patent Publication WO 02/27508) in view of Alahakoon et al. (IEEE Publication, “Dynamic Self-Organizing Maps with Controlled Growth for Knowledge Discovery,” May 2000, hereinafter “Alahakoon”). Claims 3-4, and 6-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharp in view of Alahakoon, in further view of Kohonen. Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kohonen in view of Alahakoon.

In response to the rejection of Claims 18-20 and 22 under 35 U.S.C. § 101, Claim 19 has been amended to recite “[a] computer readable medium having program code recorded thereon, the program code configured to carry out a method according to Claim 16 when executed on a computer.” These features find non-limiting support in Applicants’ disclosure as originally filed, for example at p. 4, ll. 16-23, and in original Claims 18-21. No new matter has been added. Moreover, new Claim 23 is presented, reciting the same features as

amended Claim 19, but depending from method claim 17. In addition, Claims 18, 20 and 22 have been cancelled without prejudice or disclaimer.

In response to the rejection of Claims 1-13 under 35 U.S.C. § 101 as being directed to non-statutory subject matter, Applicants respectfully traverse the rejection and request reconsideration thereof, as next discussed.

The rejection under 35 U.S.C. § 101 is based on a rejection of some of the elements of Applicants' independent Claim 1, to recite "a graphical user interface," "a user control," "a detector," "a comparator," "a generator," and "mapping logic." In addition, the Office Action contends that "there is no support in the specification that the above components necessarily include computer hardware components and is therefore non-statutory." (June 13, 2008 Office Action, starting at p. 2, l. 19). The pending Office Action fails to cite an authority to support this contention.

Applicants disagree with this statement, because Applicants' Claim 1 is directed to a system which is one of the enumerated categories of statutory subject matter under 35 U.S.C. § 101. In addition, the guidelines provided by M.P.E.P. § 2106-IV-B set forth that

a claimed invention may be a combination of devices that appear to be directed to a machine and one or more steps of the functions performed by the machine. Such instances of mixed attributes, although potentially confusing as to which category of patentable subject matter the claim belongs, does not affect the analysis to be performed by USPTO personnel. Note that *an apparatus claim with process steps is not classified as a "hybrid" claim; instead, it is simply an apparatus claim including functional limitations*. See, e.g., *R.A.C.C. Indus. v. Stun-Tech, Inc.*, 178 F.3d 1309 (Fed. Cir. 1998) (unpublished)

(M.P.E.P. § 2106-IV-B, emphasis added, portions omitted.) Applicants' Claim 1 is directed to a system, that has claim features such as "a graphical user interface," "a user control," "a detector," "a comparator," "a generator," and "mapping logic" being functional limitations that are clearly described in Applicants' disclosure.

The specification also clearly describes that these functional limitations can be implemented on a computer (Specification, p. 4, ll. 16-28,) on a camcorder (Id., p. 13, ll. 11-19), and on a personal digital assistant (Id., p. 13, ll. 20-25).

The pending Office Action has not met its burden of proof to show that Claim 1 falls outside a statutory category of patentable subject matter, by determining whether the claimed invention has a practical application that produces “a useful, tangible, and concrete result.” M.P.E.P. § 2106-IV-C-1-(2). See State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1374, 47 (Fed. Cir. 1998) (discussing practical application of a mathematical algorithm, formula, or calculation.). For example, Applicants’ Claim 1 also recites that the “graphical user interface is further configured to concurrently display a list of data representing information items, being those information items mapped onto said nodes corresponding to display points displayed within said two-dimensional region of said display area,” thereby clearly indicating that the claimed apparatus can produce a useful and concrete result. The M.P.E.P. further provides that “only when the claim is devoid of any limitations to a practical application in a technological arts should it be rejected under 35 U.S.C. § 101.” M.P.E.P. § 2106 IV-C-2-(2).

Accordingly, Applicants respectfully request that the rejection of Claims 1-13 under 35 U.S.C. § 101 be withdrawn.

In response to the rejection of Claim 1 under 35 U.S.C. § 112, second paragraph, and to correct minor formal issues, Claims 1 and 17 are amended to recite “the self-organized map” and “the quantization error,” to clarify the issues of antecedent basis. Because these changes are only formal in nature, no new matter has been added.

In response to the rejections of Claims 1-11 under 35 U.S.C. §§ 102(b) and 103(a), Applicants respectfully request reconsideration of these rejections and traverse the rejections, as discussed next.

Briefly summarizing, Applicants' Claim 1 is directed to an information retrieval system in which information items map to respective nodes in an array of nodes by mutual similarity of said information items, so that similar information items map to nodes at similar positions in said array of nodes to form a self-organizing map. The information retrieval system includes, *inter alia*: a graphical user interface configured to display a representation of nodes of the organized map as a two-dimensional display array of display points within a display area on a user display; *a comparator configured to compute a quantization error of a newly received information item and comparing the error to the organized map, and configured to retrain the organized map when the quantization error is above a predetermined threshold.*

Next, the features of Applicants' Claim 1 as discussed in the disclosure are explained in a non-limiting example. By retraining the self-organized map when a new information item is added only if the quantization error exceeds a predetermined threshold, the overall processing power required may be reduced below a level of processing power that would be required if the map were trained *every time* a new information item was added. In addition, in case the map is trained every time a new information item is added, that map would change each time an adding occurs. This can reduce the ease of use, because a user may become used to positions of commonly accessed information items on a map. Therefore, with the features of Applicants' Claim 1, it is possible to retrain the map only when it is necessary. Please note that the discussion of the features related to the comparator of Applicants' Claim 1 is for explanatory purposes only, and is not intended to limit the scope of the claims in any fashion.

The pending Office Action confirms that the reference Sharp fails to teach a comparator configured to compute a quantization error of a newly received information item and comparing the error to the organized map, and configured to retrain the organized map

when the quantization error is above a predetermined threshold, as required by Applicants' Claim 1. (Office Action, from p. 7, l. 21, to p. 8, l 2.) However, the Office Action rejects this feature based on pages 603-605 of the reference Alahakoon, and also assumes that the combination of Sharp and Alahakoon is proper. (Id, p. 8, ll. 3-11.) Applicants respectfully disagree with these contentions, as next discussed.

The reference Alahakoon describes a dynamic self organizing map with controlled growth, in which the training of the map includes an initialization phase, a growing phase, and a smoothing phase. (Alahakoon, p. 604-606, Sections A, B, and C.) Within the growing phase, Alahakoon explains that the quantization error is used to determine whether a new neuron or node should be generated during the growing phase of the self-organizing map. (Alahakoon, p. 604, col. 2, ll. 40-46.) The newly generated neuron is then trained to fit the neighborhood weights (Alahakoon, p. 605, col. 2.) The growth phase is terminated when there is a low frequency of node growth. (Id, p. 606, col. 1, ll. 1-12.) Alahakoon further explains that the map is smoothed to reduce quantization errors. (Id, p. 606, col. 1, ll. 12-27.)

In light of the above discussion, Alahakoon fails to teach a comparator configured to retrain the organized map when the quantization error is above a predetermined threshold, as required by Applicants' Claim 1. In Alahakoon, the quantization error is only used when the map is initially generated *before* the node is trained, and a new node is generated based on a quantization error, as discussed above.

Therefore, even if the combination of Sharp and Alahakoon is assumed to be proper, the cited passages of the combination fail to teach every element of Applicants' Claim 1. Accordingly, Applicants respectfully traverse, and request reconsideration of this rejection based on these references.

Independent Claim 17 recited features that are analogous to the features recited in independent Claim 1, but directed to an information retrieval method. Moreover, Claim 17 has been amended in a manner analogous to the amendment to Claim 1. Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully submit that the rejections of Claim 17 are also believed to be overcome in view of the arguments regarding independent Claim 1.

In response to the rejection of Claim 12 under 35 U.S.C. § 102(b), Claim 12 is amended to recite “wherein the dither component is a random addition to a node position of up to a half of a separation between adjacent nodes.” This feature finds non-limiting support in Applicants’ disclosure as originally filed, for example at least in the specification at p. 10, ll. 30-32. No new matter has been added. In addition, Claims 9 and 16 are amended to recite a similar feature.

In light of the above amendments to independent Claims 12 and 16, Applicants respectfully request reconsideration of the rejection under 35 U.S.C. § 102(b) and traverse the rejection, as discussed next.

Briefly summarizing, Applicants’ Claim 12 is directed to an information storage system in which information items are processed so as to map to respective nodes in an array of nodes by mutual similarity of the information items, such that similar information items map to nodes at similar positions in the array of nodes to form a self-organizing map. The information storage system includes, *inter alia*: mapping logic configured to map each feature vector to a node in the self-organizing map, the mapping between information items and nodes in the array including ***a dither component configured to display nodes that have substantially identical or identical information items at different locations in a display area to visibly distinguish the nodes having substantially identical or identical information items***

wherein the dither component is a random addition to a node position of up to a half of a separation between adjacent nodes.

Next, the features of Applicants' Claim 12 as discussed in the disclosure are explained in a non-limiting example. The use of a dither component which is a random addition to a node position of up to a half the node separation has an advantage that similar or identical information items, which usually would tend to map to similar or identical nodes, can still be distinguished from each other. (See Specification, p. 10, ll. 27-30.)

Applicants respectfully submit that the applied reference Kohonen fails to teach "a dither component configured to display nodes that have substantially identical or identical information items at different locations in a display area to visibly distinguish the nodes, wherein the dither component is a random addition to a node position of up to a half of a separation between adjacent nodes," as required by Applicants' Claim 12.

Kohonen's Fig. 6 shows a group of nodes that are formed into clusters, where nodes are displayed as a regular hexagonal array, after a user has performed a keyword search. In addition, associated to hexagonal array, eight text items are displayed in the upper portion of Fig. 6. (Kohonen, Fig. 6, Table a, "Production of color filter substrate for liquid," etc.) These eight items in "Table a" correspond to the nodes shown on the screen. However, Applicants' Claim 12 requires that the dither component is a random addition to a node position of up to a half of a separation between adjacent nodes. The cited passages of Kohonen are silent on such a feature.

The reference Alahakoon fails to remedy the deficiencies of Kohonen, even if we assume that the combination of these references is proper. Alahakoon describes a self-organizing map in which nodes are arranged in a *regular square array*. (Alahakoon, Fig. 7.)

Therefore, even if the combination of Kohonen and Alahakoon is assumed to be proper, the cited passages of the combination fail at least to teach the features related to the

dither component of Applicants' Claim 12. Accordingly, Applicants respectfully traverse, and request reconsideration of this rejection based on these references.

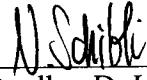
Independent Claim 16 recites features that are analogous to the features recited in independent Claim 12 directed to a information storage method. Accordingly, for the reasons stated above for the patentability of Claim 12, Applicants respectfully submit that the rejection of Claim 16 is also believed to be overcome in view of the arguments regarding independent Claim 12.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance, and an early action favorable to that effect is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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